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THE REDISCOVERY OF  
*VEROMESSOR LOBOGNATHUS*  
(ANDREWS) (HYMENOPTERA: FORMICIDAE)<sup>1</sup>

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This species of ant is exceedingly rare, and some conception of its scarcity may be gained from the fact that it was described from four worker specimens taken in 1916 and has been known primarily from these cotypes ever since. The species was collected by Professor T. D. A. Cockerell at Glenwood Springs, Colorado, and the description was drawn up by one of his students, Hazel Andrews. One of the cotypes is in the Wheeler Collection at Harvard and of the remaining three, two only are now present in the Collection of the University of Colorado Museum.

According to Creighton (1950) three specimens were examined by him which supposedly came from Missouri, but he strongly doubts the validity of the record. Recent correspondence, however, with Dr. Creighton and with Dr. W. L. Brown at the Museum of Comparative Zoology, has supplied the following information about the Missouri record. Several specimens of *V. lobognathus* were collected in Barton County, Missouri in May 1920, by J. W. Chapman. At least this is in accordance with the labels on the specimens, but Dr. Chapman denies having been in Barton County at the time indicated. His inability to remember the incident may be due to the long period which has since

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elapsed. In the Museum of Comparative Zoology there are, at present, two of Dr. Chapman's specimens. Three others are in the collection of Dr. Creighton. One of the specimens in the M. C. Z. collection bears the label "*V. lobognathus* new subsp." and this notation is attributable to Creighton (ca. 1938) who now states that he does not believe that it is a valid new subspecies. The writer concurs in this conclusion, especially because we know so little concerning the distribution and the variability of the typical form of *lobognathus*. Furthermore, the Missouri specimens are smaller than the types and the Colorado sample recently brought to light, and in this and other respects they give the impression of having come from an incipient nest. To base a new subspecies on such material is quite inadvisable.

It may seem that the record from Missouri is too far east to be credited with any assurance, especially when even the Colorado records are so far removed from the main range of the genus *Veromessor*. But it is not an impossible occurrence, since Barton County is in the southwestern section of Missouri, on the northern edge of the Ozark Plateau, where tall grass prairie and oak-hickory vegetation interdigitate.

There is the possibility that Chapman's locality may have been a Barton County in another state, and with this in mind, I have searched the maps of the following thirteen states: Iowa, Arkansas, Louisiana, Nebraska, Kansas, Oklahoma, Texas, Colorado, New Mexico, Utah, Arizona, Nevada and California, as any of these states might be included in the range of the species. Of these only Kansas possesses a Barton County and it is situated almost in the geographic center of the state. If Barton County, Kansas, is the correct location for Chapman's specimens, it is more plausible than the Missouri record, but it is still a long way east of Colorado, and for this reason extremely interesting.

The confusion which is detailed in the foregoing paragraphs serves to place in bold relief the dangers attendant upon the attachment of locality labels and the citation of such. The most meticulous care is not too much to exercise

in the recording of geographical data and always, it seems to this author, a locality should be given that is more precise than a mere county record. Some counties in western states are larger in area than whole eastern states and, moreover, they frequently encompass tremendous altitudinal changes. Anything less than the nearest large town, mountain peak, large lake, canyon, distance in highway miles, elevation or other means of pinpointing a site on a large scale map is to be deplored and should be accepted only with caution.

In 1953 Creighton suggested that the locality labels of the cotypes of *V. lobognathus* may be incorrect. While this possibility has not been overlooked, I feel that the recent rediscovery of the species in Colorado, even though at a widely separated station, lends credence to Cockerell's Glenwood Springs labels, and we now have little reason for doubting their validity.

On July 22, 1952, thirty-six years after its original discovery, *Veromessor lobognathus* was retaken by me at Owl Canyon, Colorado, approximately twenty miles northwest of Fort Collins. The nest was situated under a rock in pinyon-cedar woodland at an elevation of 6,100 feet. From the colony, 85 workers with brood were obtained, and the ants have been compared with the cotypes of *lobognathus* in the museum and found to be unquestionably conspecific with them. Only insignificant differences between them could be detected. No winged castes were secured.

On casual examination, the specimens look so much like *Pogonomyrmex occidentalis*, that until they were brought back to the laboratory, they were mistaken for that species. However, the reticulate nature of the thoracic and the cephalic sculpture, the spatulate proximal end of the scape, the pronounced saddle-like depression of the meso-epinotal suture, and the broad, sessile postpetiole easily differentiate *V. lobognathus* from *P. occidentalis*. It is the similarity in stature, in pilosity, in color, and the possession of a psammophore in both species that may confuse the unwary. Without magnification, the sculpture of these ants is also astonishingly similar. Wheeler and Creighton

(1934) briefly discuss this close correspondence, and conclude correctly that the resemblance is superficial and due to convergence. The ants are obviously in separate genera. They consider the possibility of mimicry, with *occidentalis* serving as the model. I have exerted the stings of both ants, and while that of *Pogonomyrmex* is much stouter and from appearances more powerful and effective as an organ of defense, it is not possible with the still meagre amount of information we have to say that mimicry is involved. The rarity of *lobognathus*, its distributional characters, and its superficial divergence from other species in its genus do conform to Wallace's Rules for Batesian Mimicry, but it would be premature to label the case as one of mimicry at this time. It may be legitimate to ask whether the weak stings of other myrmicine ants are equally ineffectual for defense, and also what reasons might be deduced to explain why the other members of *Veromessor* which occur in the same habitats as forms of *Pogonomyrmex* more pugnacious than *occidentalis* do not show a defensive convergence towards these latter species?

The distribution of *V. lobognathus* is distinctly unorthodox, almost all the rest of the species in the genus being confined to the southwestern deserts of Arizona, California (including the Central Valley), Lower California, and western Mexico. A gap of several hundred miles exists between the previously known records of *Veromessor* and Glenwood Springs, the type locality of *lobognathus*. Several years ago, Dr. M. R. Smith (1951) described a new form of this group, *V. lariversi*, which had been secured near Pyramid Lake, Nevada, and since then Dr. Creighton has found the species near Lone Pine, California, Wagner, Nevada, and Goldfield, Nevada. Thus the genus is now known to extend further east in the northern part of its range than heretofore. But this extension makes no significant change in the status of *lobognathus* whose most western station is in the upper reaches of the Colorado River Canyon at an altitude of 5,750 feet (Glenwood Springs), with its most recent occurrence now recorded from the eastern slope of the Rocky Mountains at an elevation of 6,100 feet. From the nature of the genus and

the species which compose it, it may be taken as certain that a distributional gap exists between these two sites, as far as *V. lobognathus* is concerned, which is imposed by the lofty heights of the continental divide. It seems extremely improbable that future collecting will demonstrate a pattern of dispersal around the southern end of the Rockies, for if such existed, the species should find itself in a much more congenial environment in the south and should have turned up as a fairly common ant in collections from such areas. The possibility of a connection across a low pass during a remote period cannot as yet be ruled out, however.

In her description of *lobognathus*, Miss Andrews includes no mention of the habitat in which the ants were found. I have found no additional ecological information upon examining the original hand-written notes. In the writer's experience, the hills and canyon walls near Glenwood Springs are covered with scrub oaks, and the river bottom, where wide enough, has meadows with some willow and cottonwood. A small amount of pinyon and cedar is also known to be present. It is not known whether the types were obtained from natural vegetation or the altered conditions in the town. The specimens collected at Owl Canyon were definitely living under natural conditions in a stand of pinyon and cedar. This is an isolated woodland (though some of the pinyons are extremely old and very large for the species), whose nearest approach of similar vegetation containing pinyons is about 160 miles south near Colorado Springs, in the Garden of the Gods. The stand is, moreover, surrounded by plains vegetation of grassland and sagebrush, and by mountain mahogany which is a foothills plant. Varying explanations have been suggested to account for the presence of these conifers near Owl Canyon in view of the fact that pinyon, while occurring far north on the west side of the divide, stops at Colorado Springs on the east. It would appear that the most plausible diagnosis is the one offered by some botanists to the effect that we are confronted with a relict stand. If this is true, the known distribution of *V. lobognathus* coincides quite well with it, for its pattern looks

like that of a relict species — rare, patchy in distribution, disconnected with its relatives, and correlated with a similar distribution of other taxonomically unrelated organisms. The cause of such a relict distribution in this case is not immediately evident, and it seems best not to speculate on this phase of the problem. On the other hand, the Owl Canyon pinyons may not be true relicts of a former more widespread vegetation type on the east slope because none of the herbaceous flora commonly associated with pinyons is present<sup>2</sup>. Also, one difficulty with a relict interpretation of the Glenwood Springs record of *lobognathus*, is that while pinyon does grow in the area, it is in no way a relict stand.

Control of distribution by a soil factor deserves consideration. Both the Owl Canyon site and the Glenwood Springs area have limestone outcroppings. Surface exposures of this rock are not abundant in Colorado, and some plants seem to show a correlation with those that do exist. Whether we can extend this reasoning to ants, and the particular case in question, is highly uncertain. In general, ants do not show the correlations with the chemical constitution of the soil that is so often true of plants. Their protoplasm is relatively protected and insulated from direct soil contact as opposed to the roots of plants. Some soil-ant relationships have been observed, however, but in such cases the effect on the ants seems to be that of the physical nature (texture) of the soil particles.

It is hoped that when the localities where *V. lobognathus* occurs are revisited, it will be possible to find the species again and study the behavior of this singular ant. At least it will be easier in the future to detect its presence in a habitat, and this may lead to the discovery of additional records. Until then, the distribution of this insect remains very problematical.

Specimens of the ant have been deposited in the collections of W. S. Creighton, the United States National Museum, and the Museum of Comparative Zoology.

<sup>2</sup>Information was secured from Dr. William A. Weber.

## POSTSCRIPT

Since this paper first went to press, some important new data have come to light. Dr. Dallas Sutton, while collecting a few ants for me, obtained specimens of *V. lobognathus* in pinyon-cedar woodland with sagebrush, at 6,500 feet, twenty miles southwest of Rangely, Colorado, on August 26, 1952. As he was unaware of the nature of his find, no other data are available. An additional record also has been kindly reported in correspondence by Dr. A. C. Cole. The ants were secured during the summer of 1954 at a point forty-five miles west of Ely, Nevada, in sagebrush desert, and according to Dr. Cole, occupied a small pebble mound nest.

These two records are extremely valuable not only because they extend the known distribution of *lobognathus* hundreds of miles beyond its previous boundaries, but serve to establish possible connections with other members of the genus, notably *V. lariversi* in eastern California and western Nevada. Thus the most western station for *lobognathus* is now in eastern Nevada (near Ely), and it is not observed again until the localities in northwestern, western, and northern Colorado are reached. Finally, it reappears in southwestern Missouri. Wherever else the species may be discovered, it seems safe to predict that it should exist in some parts of Utah and of Kansas, but such a pattern if filled out would not correlate with any major natural features of the continent, such as mountains, desert basins, or prairies. Rather, it would cut across these features. The species may prove eventually to have a wide but very local and patchy type of distribution, the elucidation of which will require extensive search and many more records.

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THE ANT CERAPACHYS RUFITHORAX AND ITS SYNONYMS —

Dr. J. W. Chapman has given me a series of *Cerapachys* taken as a uninidal lot in the Cuernos Mountains, near Dumaguete, Negros Or., Philippine Islands, and has kindly called my attention to the remarkable variation in size and form shown by its members. This variation is clearly allometric, and affects most importantly the profile of the alitrunk and thickness of the petiole and postpetiole. *C. rufithorax*, *C. negrosensis* and *C. nitida*, all described from the Cuernos Mts. (450-700 M. altitude) by Wheeler and Chapman (types in Museum of Comparative Zoology) were found to correspond to different segments of the uninidal sample as arranged according to size, so that it is evident that the three names represent size-classes of a single species. Formal synonymy follows.

*Cerapachys rufithorax* Wheeler and Chapman

*Cerapachys rufithorax* Wheeler and Chapman, 1925, *Philippine Jour. Sci.*, 28: 50, pl. 1, figs. 5, 6, 7, worker.

*Cerapachys negrosensis* Wheeler and Chapman, 1925, *ibid.*, p. 51, pl. 1, fig. 8, worker. **New synonymy.**

*Cerapachys nitida* Wheeler and Chapman, 1925, *idem*, p. 52, pl. 1, figs. 9, 10, worker. **New synonymy.**

Size differences with allometry serve as specific differences to separate other Cerapachyinae, so that we may expect further synonymic reduction as adequate series become available. — WILLIAM L. BROWN, JR., Museum of Comparative Zoology.